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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/806,647	03/22/2004	Clark R. Baker JR.	TYHO:0110-5 009103-009632	2581
52144 7590 03/15/2007 Nelcor Puritan Bennett LLC c/o Fletcher Yoder PC P.O. BOX 692289 HOUSTON, TX 77269-2289			EXAMINER BERHANU, ETSUB D	
			ART UNIT	PAPER NUMBER
			3768	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/15/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/806,647

Applicant(s)

BAKER ET AL.

Examiner

Etsub D. Berhanu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 5-13 and 15-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 13 and 15-34 is/are allowed.
- 6) ☒ Claim(s) 5-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>12/18/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 5 is objected to because of the following informalities: the first "the" in line 9 should be deleted. Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 5-9, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Diab et al.'272 (previously cited) further in view of Zahorian et al.'631 (previously cited).

Figure 11 of Diab et al.'272 discloses a pulse oximeter and a method for determining oxygen saturation comprising: a sensor 300 configured to detect first and second electromagnetic radiation signals corresponding to first and second red (301) and infrared (302) wavelengths of light; an analog to digital converter (332) coupled to the sensor to convert the first and second electromagnetic radiation signals into first and second digital signals; and a processor (334) coupled to the analog to digital converter. Diab et al.'272 further discloses that the processor is programmed with adaptive filter modules (Figure 17, filters 488 and 490 and Figure 18, filters 538 and 552) to filter the first and second digital signals and normalization modules (Figure 17, modules 480 and 482 – see also col. 40, lines 59-62) configured to normalize the first and second digital signals. Figure 14 depicts a first and second oxygen saturation calculation module (Statistics module 404 and Saturation Transform module 406) capable of providing input data to a saturation calculation module (408) to determine multiple oxygen saturation values,

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wherein the Statistics algorithm module 404 is configured to solve for the ratio of ratios (see descriptions of Figure 14, col. 38, line 67 – col. 39, line 15 and Figures 17 and 18, col. 40, line 49 – col. 45, line 29). Figure 19 is a representation of the saturation calculation module 408 and further discloses an arbitration module that takes the input from the Statistics module and Saturation Transform module (as depicted by the “BIN STATISTICS” AND “BIN POWER CURVES” blocks), and arbitrates between first and second oxygen saturation values based on a saturation confidence associated with the first and second oxygen saturation values, and wherein the saturation confidence is based on a motion indication, which is also an indication of noise characteristics (col. 45, line 30 – col. 47, line 29).

Diab et al.’272 discloses all of the elements of the current invention, as discussed above, including detecting a pulse rate (see Figure 25, element 630), except for the apparatus including a second rate calculation module and a best rate module for arbitrating between the first and second pulse rates based on a pulse rate confidence associated with the first and second pulse rate signals.

Zahorian et al.’631 teaches determining a more accurate fetal heart rate by using an apparatus comprising a processor for determining a plurality of possible pulse rates using a plurality of pulse rate finders in which each pulse rate has a different confidence level (Fig. 3), and a processor 25 for arbitrating between the plurality of possible pulse rates to determine the fetal pulse rate by selecting the rate with the highest figure of merit (Fig. 3). Zahorian et al.’631 further teaches a first pulse rate algorithm configured to analyze a waveform of a first and second digital signal (Fig. 3, peak evaluation modules), and a second pulse rate algorithm configured to analyze a frequency of a first and second digital signal (col. 8, lines 36-49).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the apparatus of Diab et al.’272 to include the processor for determining a plurality of possible pulse rates and the processor for arbitrating between the plurality of possible pulse rates, as taught by Zahorian et al.’631, since it would allow a more accurate fetal heart rate to be determined.

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4. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Diab et al.'272 further in view of Zahorian et al.'631, as applied to claim 9, further in view of Courtin et al.'878 (previously cited).

Diab et al.'272 further in view of Zahorian et al.'631 discloses all of the elements of the current invention, as discussed in paragraph 3, except for the second pulse rate algorithm including a comb filter.

Courtin et al.'878 teaches the use of a harmonic comb filter to suppress power line interference components from a digital signal (col. 4, lines 14-17).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the second pulse rate algorithm of Diab et al.'272 further in view of Zahorian et al.'631 to include a comb filter, as taught by Courtin et al.'878, since it would remove the power line interference component from the digital signal.

Response to Arguments

5. Applicant's arguments filed 18 December 2006 have been fully considered but they are not persuasive. Applicant argues on page 14 of the Remarks that Diab et al.'272 fails to teach utilizing "two different calculation algorithms" to determine oxygen saturation values. As discussed in paragraph 2 above, Diab et al.'272 does teach two different calculation algorithms – the Statistics algorithm of Figure 14, block 404, and the Saturation Transform algorithm of Figure 14, block 406. In its broadest reasonable interpretation, the term "algorithm" is used to describe a set of rules or steps followed in order to produce the desired oxygen saturation value. In the case of Diab et al.'272, two separate sets of steps are followed in order to produce 2 oxygen saturation values from the same first and second digital signal inputs. Therefore, Diab et al.'272 does suggest that two different calculation algorithms are utilized. Applicant also argues on page 15 of the Remarks that Diab et al.'272 fails to teach an arbitration module for arbitrating between the first and second oxygen saturation values based on a saturation confidence. As discussed in paragraph 2 above, the arbitration module of Figure 19 arbitrates between the two oxygen

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saturation values determined from the Statistics algorithm and the Saturation Transform algorithm in order to determine a final oxygen saturation value (see col. 46, lines 46 – col. 47, line 29). In its broadest reasonable interpretation, the term “arbitrate” is used to describe coming to an agreement on a final oxygen saturation value when two different initial oxygen saturation values are determined. To arbitrate does not require choosing between one oxygen saturation value and another oxygen saturation value. Rather, “to arbitrate between the first and second oxygen saturation values” only requires that a final oxygen saturation value be determined using the first and second oxygen saturation value determinations. Applicant also argues on page 15 that the present claims “allow for selection between only two values... to determine a best saturation value...” Examiner notes that the claims recite the arbitration module arbitrating between the first and second oxygen saturation values obtained from the first and second digital signals, and not arbitrating between only the first and second oxygen saturation values. As discussed in paragraph 2 above, and as described above in the current paragraph, the arbitration module of Diab et al. '272 arbitrates between two saturation values obtained from the first and second digital signals.

Allowable Subject Matter

6. Claims 13 and 15-34 are allowed.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action

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is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Etsub D. Berhanu whose telephone number is 571.272.6563. The examiner can normally be reached on Monday - Friday (Every other Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eleni Mantis-Mercader can be reached on (571)272-4740. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

EDB

ERIC E WINAKUR
PRIMARY EXAMINER